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41. *Corema Conradii* and its Localities. Bull. Torr. Bot. Club, 11 : 97. S. 1884.
42. Obituary Notice of John Williamson. Bull. Torr. Bot. Club, 11 : 104. S. 1884.
43. Further Notes upon *Corema Conradii*. Bull. Torr. Bot. Club, 12 : 93. S. 1885.
44. Insular Vegetation; Flora of Great Duck Island, Maine. Bull. Torr. Bot. Club, 12 : 103. O. 1885.
45. On the Flora of Martha's Vineyard and Nantucket. Proc. Acad. Nat. Sci. Phila. 1885 : 378. D. 1885.
46. Still further Notes upon *Corema Conradii*. Bull. Torr. Bot. Club, 13 : 220. N. 1886.
47. *Euphrasia officinalis* on the Coast of Maine. Bull. Torr. Bot. Club, 232. D. 1886.
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49. Rediscovery of *Corema Conradii* in Monmouth County, N. J. Bull. Torr. Bot. Club, 16 : 192. Jl. 1889; Proc. Acad. Nat. Sci. Phila. 1889 : 135. Jl. 1889.
50. *Pinus Banksiana* with *Corema Conradii* on Schoodic Peninsula, Coast of Maine. Bull. Torr. Bot. Club, 16 : 295. N. 1889; Proc. Acad. Nat. Sci. Phila. 1889 : 344. N. 1889.
51. *Stellaria hemifusa* on the Coast of Maine. Bull. Torr. Bot. Club, 17 : 38. F. 1890.
52. Notice of the Occurrence of *Scabiosa australis* near Pittsfield, Mass. Bull. Torr. Bot. Club, 19 : 341. N. 1892.
53. Obituary Notice of Isaac C. Martindale. Bull. Torr. Bot. Club, 20 : 98. 1893.
54. Preliminary Catalogue of the Plants growing on Mt. Desert and adjacent Islands. By Edward L. Rand and John H. Redfield. Cambridge. 1894.

## A fossil marine Diatomaceous Deposit at St. Augustine, Florida.

BY CHARLES S. BOYER.

In 1886 an artesian well was sunk at the Ponce de Leon Hotel, at St. Augustine, Florida. Samples of earth from different depths were sent to Mr. Lewis Woolman, who proposes to publish the results of his investigations into the geological character of the different strata. A layer of bluish clay at a depth of between 85 and 135 feet was found to contain diatoms, spicules, foraminifera and a few polycistinae. Unfortunately, the material was very small in amount, and the diatoms occurred in but two layers at the depths of 90 and 120 feet, so that the list furnished below, although exhaustive of the material obtained, appears to but indicate the existence of a richer bed which, it is hoped, may be

brought to light by another well-boring or the discovery of some outcrop.

It may be briefly stated, according to Mr. Woolman's conclusions, that the diatomaceous clay bed immediately overlies an Eocene deposit and is beneath a Pleistocene. As will be noticed, the diatoms correspond, to a great extent, to those of the great Miocene beds of the Atlantic coast, such as the Richmond, Nottingham and Atlantic City deposits; the presence of one form, at least, if not two, appears to indicate a correspondence with the Barbadoes deposit, which is now claimed to be Pliocene, while other forms are still extant. It is, therefore, difficult to determine to what period the Florida deposit belongs.

The following are the forms:—

*Actinocyclus Ehrenbergii* Ralfs, several varieties.

*A. ellipticus* Grun., rare.

*A. interpunctatus* Ralfs.

*A. Ralfsii* (Wm. Sm.) Ralfs.

*A. subtilis* (Greg.) Ralfs, var.

*Actinoptychus Grundleri* A. S.

*A. undulatus* Ralfs, several vars.

*A. vulgaris* Schum., several vars.

*Aulacodiscus Crux* Ehr., rare.

*A. mammosus* (var. *extans*?) Grev., very rare. Diam. o. 152  $\mu$ m.

Surface, central portion, flat to about one-half of the radius, outer edge distinct but somewhat turned inward at the inflations, giving a slightly quadrangular outline. Central space in one specimen round, in the other irregular. Width of bullae *about one-fourth the radius*. In Greville's figure the width appears to be about one-half. The processes are also smaller in the Florida form. Not being able to secure a specimen of Greville's species for comparison, I am unable to determine the differences further. Mr. Adre. Le Tourneur, of Paris, from an examination of a photograph sent him, thinks it may be the variety *extans* (Grev.) Rattr. This beautiful form is quite rare, only two nearly perfect valves and three fragments having been noticed. It has not been found, heretofore, we believe, in any other of the continental deposits, and its presence appears to link the Florida diatoms with those of Barbadoes.

*A. Molleni* Grun.

*A. Rogersii* (Bail.) A. S., common at 90 ft.

The deposit presents all the forms figured by Schmidt, with a number of intermediate variations.

*Biddulphia Tuomeyi* (Bail.) Roper. Several variations of this form approach *B. elegantula* Grev., and others are much smaller than the type.

*Coscinodiscus apiculatus* Ehr.

*C. marginatus* Ehr.

*C. emphalanthus* Ehr.

*C. perforatus* Ehr.

*C. radiatus* Ehr.

*C. robustus* Grev.

The forms of *Coscinodisci* noticed furnish an interesting study of variations, especially in those which approach *apiculatus* and *marginatus*.

*Craspedodiscus coscinodiscus* Ehr., 120 ft.

*Eupodiscus radiatus* Bail. A form with five ocelli occurs rarely at the depth of 90 ft.

*Goniothecum odontella* Ehr., 90 ft.

*Grammatophora maxima* Grun. var.? rare.

*Hyalodiscus laevis* Ehr.

*H. subtilis* Bail. The markings in the greater number of specimens examined are much coarser than in the type form. In some valves which present a greenish color when dry, numerous spines are seen at regular intervals, and the zone between umbilicus and margin resembles that of *H. maximus*, P. Petit (Diatomee's de l'le Campbell, *pl. 4. fig. 7*). Other forms without spines correspond closely to the var. *Japonica* of Castracane (Rep. on Diat. coll. by H. M. S. Challenger, *pl. 18. fig. 4*).

*Melosira sulcata* (Ehr.) K., abundant.

*Navicula Lyra* Ehr., very rare, 90 ft.

*N. praetexta* Ehr., very rare, 90 ft.

*Pleurosigma affine*, var. *fossilis* Grun.

*Podosira Montagnei* Kütz.? , very rare, 90 ft. This form is doubtful as the rim is wider and the general appearance more robust than in any of the figures published.

*Rhaphoneis gemmifera* Ehr.

*Rhizosolenia* sp. ?

*Stephanogonia* (*Mastogonia*) *actinoptychus* Ehr., rare.

*Stephanopyxis appendiculata* Ehr.

*S. corona* (Ehr.) Grun.

*S. turris* (Grev.) Ralfs, rare.

*Stictodiscus Truanii* Witt. ?, very rare, 90 ft. This form differs from that figured by Truan and Witt. (*Die Diat. der Polycyst. von Jeremie in Hayti, pl. 4. figs. 23 & 24*), inasmuch as the rim is less definite and the outline slightly irregular. Only one imperfect specimen was found. It appears to form another link between the continental and insular deposits.

*Triceratium condecorum* Ehr., rare, 90 ft.

*T. Kainii* E. A. Schultze, rare, 120 ft.

*T. semicirculare* Brightw.—*Euoia Brightwellii* Ralfs.

*T. spinosum* (Ehr.) Bail.

## New Species of Parasitic Fungi.

BY S. M. TRACY AND F. S. EARLE.

[Type specimens in the herbaria of the authors, of the U. S. Department of Agriculture, of Rutgers, Harvard and Columbia Colleges.]

*PUCCINIA NOTABILIS* n. sp. III. Amphigenous; sori black, confluent, forming small hemispherical or irregular masses on the bracts and petioles or involving the larger stems, forming fusiform black gall-like swellings two or three times their diameter and 3–4 cm. in length; teleutospores uniformly oval and obtusely rounded, slightly constricted, epispore smooth, thickened at the apex, 55–60 by 30–33  $\mu$ ; pedicel hyaline or slightly tinted, very long and flexuous, 225–275  $\mu$ .

On Arrow-wood (*Pluchea borealis* ?) Rio Penasco, New Mexico, January, 1895.

*PUCCINIA PASPALI* n. sp. II. Usually hypophyllous, sometimes amphigenous; sori linear, sometimes confluent, dark brown; uredospores globose or obovate, very abundantly and sharply echinulate, brown, 24 by 25–30  $\mu$ . III. Sori linear, darker than the uredo sori, usually on the leaf sheaths; teleutospores irregular, 35 by 27 to 30 by 35  $\mu$ , usually oval, much constricted, with the slender nearly hyaline pedicel attached obliquely to one side of the lower end, often orbicular with the septum vertical and the